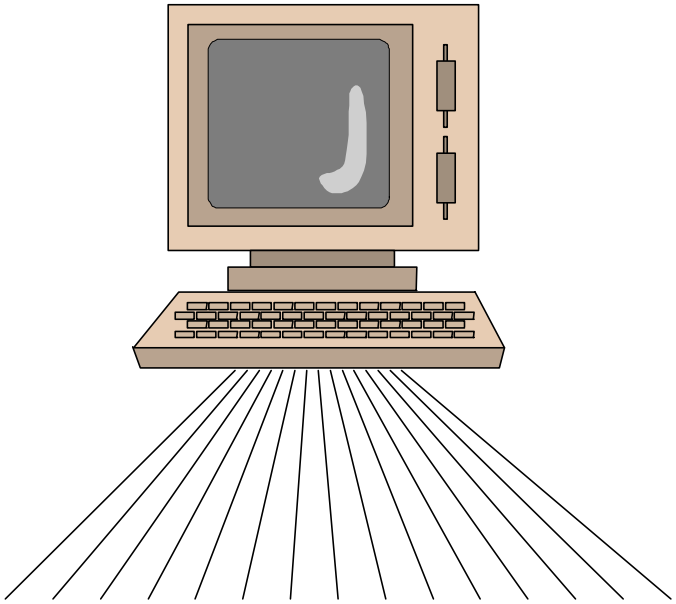
CAREER GUIDE

Electronics Engineering Technology



Central Carolina Community College

November 1999

Introduction

Virtual Reality . . . Cellular Phones . . . The Internet . . . Global Positioning Satellites . . . Fiber Optic Communications . . . . Microcontrollers. These technologies are made possible because of the tremendous power and versatility of electronics. In the past decade, the electronics field has literally exploded with exciting applications, opening many job opportunities globally, nationwide, and throughout North Carolina. Electronics companies anticipate an increasing demand for skilled technicians to select, install, operate, maintain and repair the variety of systems that support their industries. This means a great opportunity for you to build an exciting career in electronics!

Tasks of an Electronics Technician

Pick your area of interest! The job opportunities for EET technicians are quite varied in today's market. Our graduates work in the areas of product development, product testing, equipment repair, field service, research, customer service, sales or marketing. Depending on the company, the technician's job may include fabricating electronic circuits and systems from engineering drawings, modifying and testing engineering designs, maintaining and calibrating test equipment, operating electronics systems, or assisting customers with technical questions. Many technicians begin work in one or more of these areas and advance as they continue to develop their skills.

Some graduates prefer to work for large corporations while others choose to work with small companies. Some will work with a private industry while others will find work with government agencies. The EET program at CCCC provides broad-based training to prepare you to work in any environment.

The specific tasks performed by electronics technicians include the following:

a) Troubleshoots and repairs electronics systems.

b) Performs tests and measurements using electronic devices.

c) Prepares and reads technical drawings and schematics.

d) Maintains a laboratory notebook, performs data manipulation and prepares reports.

e) Utilizes electrical safety practices in the laboratory.

f) Operates and calibrates voltmeters, power supplies, function generators, and oscilloscopes..

g) Selects electronic components based on electronic and mechanical properties using manufacturers' catalogs and other trade publications.

h) Communicates effectively with engineers, scientists, doctors, production and sales personnel and others through laboratory notebooks, reports, letters, presentations and conversations.

Conditions of Work

Electronics technicians work in a wide variety of environments: laboratory clean rooms, construction sites, manufacturing plants, or hospital operating rooms to name a few. They may work at relatively sedentary jobs, assembling or operating systems in the same environment every day, or they may be required to move around frequently, in and out of laboratory areas, production sites or offices. Some technicians are based in an office or laboratory while others may travel the country as a sales or service representative.

Many technicians dress casually for work while a few may don lab coats or sterile surgical suits and caps. On construction sites, the technician will be required to observe certain site rules and wear hard hats and steel toed shoes.

Certain hazards are present in some areas where high voltage systems are being used. First, power supplies for systems like Cathode Ray Tubes (CRTs) or television picture tubes utilize high voltages. The technician must develop a careful, methodical manner of working around potentially lethal amounts of electricity. In the fiber optics industry, laser beams are frequently capable of seriously injuring users and bystanders, either through direct exposure to the beam or by reflected light from the laser. Technicians must wear goggles designed to protect against hazards from the particular laser in use.

The electronics technician often works as part of a team, sometimes with scientists and engineers, sometimes as a member of a production team or supervisory group. Some technicians work alone, but are usually directly responsible to an engineer or a scientist.

In a recent North Carolina Department of Labor survey, the starting salary for Electronics Technicians was listed as $28,662. With several years of experience a technician can earn over $40,000 per year as a result of raises and promotions.

Why Choose Electronics?

Because there is a big future in it! Many positions are currently going unfilled nationwide because industry cannot find enough technicians to fill their job openings. This means higher salaries and faster promotional potential! Opportunities for advancement in the field electronics are excellent for those technicians who keep abreast of the rapid changes occurring in this field. Technicians who are curious, investigative and adaptable in their attitudes quickly become more
valuable and earn higher salaries, while those who are content to ride on their education may soon find that their skills and knowledge are out of date and out of demand. Technicians who wish to advance should look upon their technical education as a springboard for continued learning.

Research institutions often have a multi-step grading system for technicians who can advance according to experience, education and job performance. In private industry, technicians sometimes advance to supervisory or management positions if they show themselves to be highly effective, organized and skilled in supervisory tasks as well.

Job Opportunities

Some of the companies in North Carolina which potentially hire electronics technicians include:

Alcatel Network Systems: Raleigh
Cisco Systems: Cary
Cree, Inc.: RTP
Conveyor Technologies: Sanford
Data General: Apex
Eaton Corporation: Sanford
Fawn Industries: Middlesex
IBM: Raleigh and Research Triangle Park
MCI: Cary
NorTel: Research Triangle Park and Creedmoor
Raychem: Fuquay-Varina
Research Triangle Institute: Research Triangle Park
Trion: Sanford
Static Control Products: Sanford

Is the Electronics Program for me?

The electronics field has many applications involving a wide range of skills and knowledge. Thus, a very diverse group of people find themselves "at home" in electronics technology. However, some interests and abilities are required for almost every application of electronics and these are good indicators of what kind of person can succeed and be satisfied in this field. Prospective technicians should be genuinely interested in how devices and systems work. A tendency to "tinker" with machines and instruments is highly appropriate in this field. An interest in science and an enjoyment of high school laboratory activities may also indicate a suitability for this career.

The prospective technician should be a curious person who likes to learn new things and who frequently finds futuristic technology appealing. Prospective students who wish to enter this field are probably best suited for it if they are looking for a lifelong challenge and a career as opposed to "just a job". A reasonable degree of intelligence and a strong motivation to learn are important. Students should like mathematics or be willing to overcome their fear or dislike of it because basic mathematics are needed in this field. Written and oral communications are very important in the majority of electronics technician positions, particularly those in sales, service and research and development. Physical strength is not usually required for electronics technicians, but good manual dexterity and coordination are quite important. A good attitude and a genuine desire to succeed are your greatest assets.

High school students who wish to enter the Electronics Engineering Technology curriculum should consider taking English composition, algebra, geometry, physics, drafting or computer basics during their high school years.

The EET Program at CCCC

The EET program at CCCC has successfully trained entry-level technicians for North Carolina's industry for over 25 years, demonstrating the College's commitment to industry and economic development. Classrooms and labs are housed on CCCC's Sanford campus. The EET laboratories include state-of-the-art training instrumentation, Pentium computers, and a variety of innovative training modules, some of which were developed by CCCC's instructional engineering staff.

The curriculum design is based on a nationwide survey of the EET industry. In addition, the EET program listens closely to our Industrial Advisory Committee to assure that our curriculum accurately reflects the needs of regional employers. The curriculum, like the industrial field itself, is in a constant state of evolution. New course materials and equipment are incorporated to meet changes occurring in the EET industry. Many courses are revised and improved each time that they are taught, insuring that the student is receiving the best training possible.

Students progress through the interdisciplinary program and build upon a technical foundation of mathematics, science, and electronics courses. An in-depth sequence of laboratory learning experiences develops the hands-on skills needed for all phases of electronics operation and maintenance.

Upon graduation from the program, the successful student is awarded an Associate in Applied Science degree and is qualified for work in industry as an entry electronics technician. Currently, the EET program is offered during the daytime. Occasional night courses are available depending on student demand.

A variety of opportunities for continued learning are available to the EET graduate. Some students continue their education toward a bachelor's degree at UNC-Charlotte or Appalachian State University. (Some extra coursework may be beneficial for students choosing this career path. See a counselor or your curriculum advisor for details.) The AAS degree from CCCC does not directly transfer to NC State or other engineering schools.

What to do Next?

To apply for admission to the EET program at CCCC, simply visit or call CCCC's Admissions office at 919-775-5401 or 1-800-682-8353 to request an application. They can also send you information about placement testing and financial aid. Just complete the application and bring it or mail it back to CCCC. We'll do the rest!

Our mailing address is:

Central Carolina Community College
1105 Kelly Drive
Sanford, NC 27330

For further technical information, or to arrange a visit to CCCC's Electronics facility and laboratories, please contact any of the faculty members from the listing that follows at:
919-775-5401 or 1-800-682-8353.

Faculty Profiles

Mr. Jerry Clendenen
Instructor, Electronics Engineering Technology

Mr. Clendenen joined CCCC in 1998 in the Electronics program. His educational background includes an AAS degree in Electronics Engineering Technology from Sacramento City College and a BS in Professional Aeronautics from Embry-Riddle Aeronautical University. He has 27 years of electronics experience with the Department of the US Army.

Mr. Steve Lympany
Department Chair, Electronics and Engineering Technologies

Mr. Lympany has been with CCCC since 1986. In 1987 he developed the college's Laser and Photonics program. He has been Department Chair for Engineering Technologies since 1996. He has a Bachelor's degree in Electrical Engineering from Virginia Tech and a Master's degree in Liberal Studies from North Carolina State University. His industry experience includes 7 years in design, development and applications engineering with GTE Labs, ITT, and Siecor.

Curriculum Description

	Course Title	Credit Hours
First Semester		
CIS 111	Basic PC Literacy	2
EGR 131	Intro to Electronics Tech	2
ELC 131	DC/AC Circuit Analysis	5
ENG 111	Expository Writing	3
ENG 111A	Expository Writing Lab	1
MAT 121	Algebra/Trigonometry I	3
Second Semester		
ELC 127	Software for Technicians	2
ELN 131	Electronic Devices	4
ELN 133	Digital Electronics	4
MAT 122	Algebra/Trigonometry II	3
PHY 131	Physics-Mechanics	4
Third Semester		
ELN 132	Linear IC Applications	4
PHY 133	Physics-Light and Sound	4
Fourth Semester		
ELN 232	Intro to Microprocessors	4
ELN 234	Communications Systems	4
ELN 237	Local Area Networks	3
ENG 114	Prof. Research and Reporting	3
	Social Science Elective	3
Fifth Semester		
ELN 233	Microprocessor Systems	4
ELN 247	Electronics App Project	2
ELN 275	Troubleshooting	2
ISC 221	Statistical Qual Control	3
	Technical Elective	3
	Humanities Elective	3
	Total Hours	**75**